

WHAT IS CLAIMED IS:

1. A multifunctional time measurement device including a mechanism, having a function of measuring at least an arbitrary elapsed time, for disabling the function from being reset after the function is started and enabling the function to be reset after the function is stopped, wherein the function is continuously held in an electrical ON state after being started, except when being normally stopped.

2. A time measurement device according to claim 1, wherein the function is also held in the electrical ON state even when the power-supply voltage falls below an operating voltage for the function and then reaches again a voltage for allowing the operation.

3. A time measurement device according to claim 1 or 2, further comprising an actuating section for operating the start and stop of the function, wherein the electrical ON state of the function is switched to the OFF state by stopping the function by the actuating section.

4. A time measurement device according to claim 3, wherein the function is normally stopped when being stopped by the actuating section.

5. A time measurement device having a hand for indicating at least an arbitrary measured elapsed time, and a mechanism for disabling the hand from being returned to zero after the hand is driven and for enabling the hand to be returned to zero after the hand is stopped, wherein a driving signal for the hand is continuously maintained after the driving of the hand is started, except when the hand is normally stopped.

6. A time measurement device according to claim 5, wherein the driving signal for the hand is also maintained when the power-supply voltage falls below the driving voltage for the hand, and then reaches again the voltage for allowing the operation.

7. A time measurement device according to claim 5 or 6, further comprising an actuating section for operating the start and stop of the hand, wherein a driving signal for the hand is switched to a stop signal by operating the stop of the hand by the actuating section.

5 8. A time measurement device according to claim 7, wherein the hand is normally stopped when the stop of the hand is operated by the actuating section.

9. A time measurement device having a hand for indicating at least an arbitrary measured elapsed time, a first actuating section for actuating the starting and stopping operations of the hand, a second actuating section for actuating an operation of returning the hand to zero, and a safety mechanism for disabling the second actuating section when the hand is driven by operating the first actuating section and for enabling the second actuating section when the hand is stopped by operating the first actuating section, further comprising a control section for continuously maintaining a driving signal for the hand after the hand is driven by operating the first actuating section, except when the hand is normally stopped.

10. A time measurement device according to claim 9, wherein the control section has a pattern on a circuit board, and a lever for making mechanical contact with the pattern, and the driving signal for the hand is continuously maintained by keeping the lever in contact with the pattern.

11. A time measurement device according to claim 10, wherein the control section includes a pull-up resistor or a pull-down resistor for determining a signal output to the pattern, a sampling circuit for intermittently operating the pull-up resistor or the pull-down resistor, and a holding circuit for recognizing the signal to the pattern during a sampling period in which the pull-down resistor or the pull-up resistor is intermittently operated by the sampling circuit and for holding and outputting the recognized signal except when the signal is recognized.

12. A time measurement device according to claim 9, wherein the driving signal for the hand is also maintained when the power-supply voltage falls below the

driving voltage for the hand, and then reaches again the voltage for allowing the operation.

13. A time measurement device according to claim 9, wherein the hand is normally stopped when the stop of the hand is operated by the first actuating section.

14. A time measurement device according to any of claims 9 to 13, wherein the driving signal for the hand is switched to a stop signal by the operation of the first actuating section of stopping the hand.

15. A time measurement device according to any of claims 1 to 14, wherein the time measurement device is an electronic timepiece.

16. A time measurement method having a function of measuring at least an arbitrary elapsed time so as to disable the function from being reset after the function is started and to enable the function from being reset after the function is stopped, wherein the function is continuously held in an electrical ON state after being started, except when being normally stopped.

17. A time measurement device having a hand, wherein the hand is stopped at a position a predetermined time advanced from the maximum measurement time when the time measured by a time measurement function exceeds the maximum measurement time.

18. A time measurement device according to claim 17, further comprising a safety mechanism for preventing the measured time from being initialized during time measurement, and an actuating mechanism for mechanically initializing the measured time after the time measurement.

19. A time measurement device having a hand, comprising:
a measuring section for measuring time;

a hand moving section for moving the hand when time measurement is started in the measuring section;

a comparing section for comparing the value measured by the measuring section with a preset value; and

5 a hand movement stopping section for stopping the movement of the hand at a hand position a predetermined time advanced from the maximum measurement time based on the result of comparison by the comparing section.

20. A time measurement device having a hand, comprising:

a time measuring function having the capability of measuring time;

a motor for driving the time measuring function;

a control circuit for controlling the driving of the motor so as to start/stop time measurement by the time measuring function; and

a control section having an automatic stop counter for measuring the elapsed time from the start of time measurement based on a signal from the control circuit and outputting an automatic stop signal to the control circuit when the maximum measurement time elapses,

wherein the automatic stop counter stops the driving of the time measuring function when the hand turns to the preset hand position after a predetermined time elapses from the maximum measurement time during time measurement by the time measuring function.

21. A time measurement device according to claim 20, wherein the automatic stop counter outputs the automatic stop signal when a plurality of hands in the time measuring function turn to the preset hand positions.

22. A time measurement device according to claim 21, wherein the automatic stop counter counts pulses for timing the output of motor pulses for driving the motor, and outputs the automatic stop signal when the count reaches a value corresponding to the automatic stop position.

23. A time measurement device according to any of claims 17, 19, and 20, wherein the predetermined time is a time in which a hand is advanced a preset time from the maximum measurement time.

24. A time measurement device according to any of claims 17, 19, and 20, wherein the predetermined time is a time in which a plurality of hands are positioned in a preset direction after the maximum measurement time.

25. A time measurement device according to any of claims 17, 19, and 20, wherein the predetermined time is a time in which a plurality of hands are positioned at almost the same angle position after the maximum measurement time.

26. A time measurement device according to any of claims 17 to 25, wherein the time measuring function is a chronograph.

27. A time measurement device according to any of claims 17 to 26, wherein the power-supply battery is a secondary battery, and is charged by a power-generating device.

28. A time measurement device according to claim 27, wherein a hand for measuring the minimum unit time is continuously turning during time measurement.

29. A time measurement method using a hand, wherein the hand is stopped at a position a predetermined time advanced from the maximum measurement time when the time measured by a time measurement function exceeds the maximum measurement time.

30. A time measurement method using a hand, comprising the steps of:
measuring time by a measuring section;

moving the hand by a hand moving section when time measurement is started in the measuring section;

comparing a value measured by the measuring section with a preset value by a comparing section; and

stopping the movement of the hand at a hand position a predetermined time advanced from the maximum measurement time by a hand movement stopping section based on the result of comparison by the comparing section.

31. A time measurement method using a hand, comprising the steps of:

measuring time by a time measuring function;

driving the time measuring function by a motor;

controlling the driving of the motor by a control circuit so as to start/stop time measurement by the time measuring function; and

measuring an elapsed time from the start of time measurement by an automatic stop counter based on a signal from the control circuit and outputting an automatic stop signal to the control circuit when the maximum measurement time elapses,

wherein the control section controls the control circuit and the automatic stop counter, and the automatic stop counter stops the driving of the time measuring function when the hand turns to a preset hand position after a predetermined time elapses from the maximum measurement time during time measurement by the time measuring function.

32. A time measurement device comprising:

an ordinary time indicating section for indicating ordinary time;

a time measuring section for measuring the elapsed time;

an external input section for starting and stopping the operation of the time measuring section from the outside; and

a holding section for holding an electric signal for determining the operation state of the time measuring section based on the operation of the external input section,

wherein the holding section enables the input from the external input section after disabling of the time measuring section is cancelled when a state in which the time measuring section in an enabled state does not operate due to low power-supply voltage or no voltage application is turned into a state in which the power-supply voltage for allowing the time measuring section to operate is applied.

33. A time measurement device according to claim 32, further comprising a detecting section for intermittently detecting an H-level or L-level signal held by the holding section, wherein the detecting section is stopped in a state in which the time measuring function is to be disabled.

34. A time measurement device according to claim 32 or 33, further comprising a second time measuring section for measuring time, wherein the second time measuring section measures time since the operation is enabled, and disabling of the time measuring section is cancelled when a predetermined time has elapsed.

35. A time measurement device according to claim 32 or 33, further comprising a voltage detecting section for detecting the power-supply voltage, wherein the power-supply voltage is detected by the voltage detecting section, and disabling is cancelled when the power-supply voltage exceeds a preset voltage.

36. A time measurement device according to claim 32 or 33, further comprising:
a second time measuring section for measuring time; and
a voltage detecting section for detecting the power-supply voltage,

wherein the time in which the power-supply voltage detected by the voltage detecting section is higher than a preset voltage is measured by the second time measuring section, and disabling of the time measuring section is cancelled after a predetermined time has elapsed.

37. A time measurement device according to any of claims 32 to 36, wherein, while the time measuring section is disabled, the signal held by the holding section

is switched from the L level to the H level or from the H level to the L level, and disabling of the time measuring section is thereby cancelled.

38. A time measurement device according to any of claims 32 to 37, wherein the time measuring section is a chronograph.

5 39. A time measurement device according to any of claims 32 to 37, wherein the time measuring section is a timer function.

40. A time measurement device according to claim 38 or 39, wherein the time measuring section has a safety mechanism for mechanically preventing the measured time from being initialized during time measurement.

41. A time measurement device according to any of claims 32 to 40, further comprising a power-generating unit including a rechargeable charge section, and a power-generating section for charging the charge section.

42. A time measurement device according to claim 41, wherein the power-generating section is composed of a power-generating rotor and a power-generating coil.

43. A time measurement device according to claim 42, wherein the power-generating rotor is rotated by an oscillating weight.

44. A time measurement device according to any of claims 32 to 40, wherein the power-generating rotor is rotated by operating a crown.

20 45. A time measurement device according to any of claims 32 to 44, wherein the time measurement device is a wristwatch.

46. A time measurement method comprising the steps of:
indicating ordinary time by an ordinary time indicating section;
measuring the elapsed time by a time measuring section;

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starting and stopping the operation of the time measuring section from outside by an external input section;

5 holding an electric signal for determining the operation state of the time measuring section in response to the operation of the external input section by a holding section,

10 wherein the holding section cancels disabling of the time measuring section when a state in which the time measuring section in an enabled state does not operate due to low power-supply voltage or no voltage application is turned into a state in which the power-supply voltage for allowing the time measuring section to operate is applied.